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Audit Report

OFFICE OF THE INSPECTOR GENERAL

CORPORATE EXECUTIVE INFORMATION SYSTEM

Report No. 97-152 June 6, 1997

Department of Defense

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Acronyms

MAIS	Major Automated Information System
OASD(HA)	Office of the Assistant Secretary of Defense (Health Affairs)
ORD	Operational Requirements Document
PMO	Program Management Office

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

June 6, 1997

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (COMPTROLLER)
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)
ASSISTANT SECRETARY OF DEFENSE (HEALTH AFFAIRS)
DIRECTOR, OPERATIONAL TEST AND EVALUATION
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION

SUBJECT: Audit Report on Corporate Executive Information System (Report No. 97-152)

We are providing this report for your information and use. This is the third of three reports on our audit project titled, "The Department of Defense Health Care Cost Accounting Systems."

We provided a draft of this report on April 14, 1997. Because the report contains no recommendations, written comments were not required, and none were received.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Michael A. Joseph, Audit Program Director, or Mr. Sanford W. Tomlin, Audit Project Manager, at (757) 766-2703. See Appendix B for the report distribution. The audit team members are listed inside the back cover.

David K. Steensma

David K. Steensma
Deputy Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 97-152 **June 6, 1997**
(Project No. 6LF-0047.02)

Corporate Executive Information System

Executive Summary

Introduction. The Corporate Executive Information System (the System) development began in June 1995 when the Army Surgeon General was designated as the Executive Agent. The System is intended to provide customers throughout the Military Health Services System validated clinical, financial, managed care, and administrative decision support and executive information. Customers include health care providers and command staff within military treatment facilities, DoD lead agents, major medical commands, surgeons general, and the Office of the Assistant Secretary of Defense (Health Affairs). The System will be the major source of data for health care and budgeting decisions.

Audit Objectives. The overall audit objective was to determine whether DoD health care cost accounting systems provide managers with adequate and reliable information for cost-effective health care and budgeting decisions. During the audit, the Deputy Assistant Secretary of Defense (Health Budgets and Programs) requested that we delay our review of the cost accounting systems because several initiatives were underway to improve DoD health care automated information systems. Therefore, we limited our audit coverage to the development of the System. We also evaluated the management control program of the Assistant Secretary of Defense (Health Affairs) as it applied to the System.

Audit Results. The System was not classified as a major automated information system, and its life-cycle cost was not adequately estimated and reported. As a result, development risks, such as not meeting the needs of System users; slipping deployment schedules; incurring additional cost due to delays in the shutdown of existing systems; and the System not representing the best value solution for meeting user requirements, were not mitigated. The Program Management Office initiated action to reduce the risks discussed in this report. The most significant action was the transfer of System approval authority to the Major Automated Information System Review Council on October 17, 1996. In our opinion, classifying the System as a major automated information system and the resulting increased focus on program management has established the key controls necessary to reduce risks associated with system development. Therefore, we are not making recommendations in this report. See Part I for details of the audit results and Appendix A for details on the management control program.

Management Comments. We provided management a draft of this report on April 14, 1997. Because the report contains no recommendations, written comments were not required, and none were received.

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Part I - Audit Results

Audit Background

The Office of the Assistant Secretary of Defense (Health Affairs) (OASD[HA]) is responsible for the effective execution of the DoD health care mission. The mission includes providing top quality health services whenever needed; supporting military operations; and providing services to members of the Armed Forces and their dependents and to others entitled to DoD health care. To efficiently carry out this mission, the OASD(HA) has adopted a systematic approach to eliminate unnecessary duplication of health care information systems. This approach includes migrating the necessary functionality of multiple legacy (existing) systems into one target executive information and decision support system. The Corporate Executive Information System (the System) is the target system that will support medical treatment facilities, dental treatment facilities, lead agents, the Military Departments, and other DoD users.

System development began in June 1995 when the Principal Deputy Assistant Secretary of Defense (Health Affairs) signed a contract designating the Army Surgeon General as the System's Executive Agent. According to the contract, the Military Health Services System Proponent Committee serves as the milestone decision authority and approves System functional requirements. The System is intended to be an executive information and decision support package that presents data collected from a variety of information systems. It will be designed, developed, deployed, and implemented in two major phases, near term and far term. Near-term products, initially scheduled for deployment beginning in July 1996, will focus on absorption of functionality from eight existing systems, with limited new functionality. Far-term products, scheduled for deployment beginning in October 1998, will provide DoD managers with medical information needed to make health care and budgeting decisions. For example, the System will provide data to assist in decisions relating to capitation budgeting, contract bidprice adjustments, utilization management, and other areas.

Audit Objective

The overall audit objective was to determine whether DoD health care cost accounting systems provided managers with adequate and reliable information for cost-effective health care and budgeting decisions. During the audit, the Deputy Assistant Secretary of Defense (Health Budgets and Programs) requested that we delay our review of cost accounting systems because several initiatives were underway to improve DoD health care automated information systems. Therefore, we limited our audit coverage to the development of the System. We also evaluated the management control program of the Assistant

Secretary of Defense (Health Affairs) as it applied to the System. See Appendix A for a discussion of the scope and methodology and for details of our review of the management control program.

Managing the Corporate Executive Information System Acquisition

The Corporate Executive Information System (the System) was not classified as a major automated information system (MAIS), and life-cycle cost was not adequately estimated and reported. This occurred because controls were not in place to define and manage user requirements. As a result, significant development risks, such as not meeting the needs of System users; slipping deployment schedules; incurring additional cost due to delays in the shutdown of existing systems; and the System not representing the best value solution for meeting user requirements, were not mitigated. Recent management action has established key controls necessary to reduce risks associated with system development.

Criteria

DoD Directive 5000.1. DoD Directive 5000.1[1], "Defense Acquisitions," March 15, 1996, provides broad policies and principles for all DoD acquisition programs, and establishes a disciplined, yet flexible, management approach for acquiring quality products. The Directive establishes responsibilities for DoD Component heads that includes ensuring that policies and procedures governing the operation of the Component's acquisition, budgeting, and requirements systems are effectively implemented. The Directive summarizes the primary objective of a defense acquisition as:

> . . . to acquire quality products that satisfy the needs of the operational user with measurable improvements to mission accomplishment, in a timely manner, at a fair and reasonable price. Successful acquisition programs are fundamentally dependent upon competent people, rational priorities, and clearly defined responsibilities. The following policies and principles govern the operation of the defense acquisition system and are divided into three major categories: (1) Translating Operational Needs into Stable, Affordable Programs, (2) Acquiring Quality Products, and (3) Organizing for Efficiency and Effectiveness. These principles shall guide all defense acquisition programs.

DoD Regulation 5000.2-R. DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System (MAIS) Acquisition Programs,"

[1]Effective March 15, 1996, DoD Directive 5000.1 and DoD Regulation 5000.2-R consolidated acquisition guidance previously provided under DoD Directives 5000.1 and 8120.1. The overall concepts and requirements established in prior guidance are consistent with requirements in the new DoD directive and regulation.

March 15, 1996, establishes mandatory procedures for MAIS acquisition programs. It defines a MAIS acquisition program as an automated information system program that is estimated to require program costs in any single year in excess of $30 million; total program costs in excess of $120 million; or total life-cycle cost in excess of $360 million. The regulation replaced earlier guidance that contained lower cost thresholds. It requires management to structure the MAIS to ensure a logical progression through a series of phases designed to reduce risk, ensure affordability, and provide adequate information for decisionmaking that will provide the need in the shortest practical time.

Designation as a Major Automated Information System

The System was not classified as a MAIS until October 1996. As total system requirements grew, the cost thresholds that identify a MAIS candidate were surpassed. From October 1995 to September 1996, changing requirements resulted in total life-cycle cost estimates varying from $110 million to $362 million. In June 1996, the OASD(HA) had obligated $54 million in FY 1996 System development funds, exceeding the $30 million per year MAIS requirement. We could not determine, from available documentation, at what point before the actual expenditure of funds the Program Management Office (PMO) became aware that the MAIS cost thresholds would be surpassed.

Estimating and Reporting Life-Cycle Cost

The PMO did not adequately estimate and report the System's life-cycle cost. Life-cycle cost is the total cost to the Government for the System over its full life. It includes the cost of requirements analysis; design; development; acquisition and lease; operations; support; and where applicable, disposal. The life-cycle cost is critical to many facets of program management, such as evaluating the System's cost-effectiveness and determining the amount and timing of funding requirements. Estimating and reporting accurate cost are necessary for successful System control and development.

Estimated Cost. Life-cycle cost of the System was not adequately estimated. The PMO did not have the capacity and usage information necessary to accurately determine System cost. For example, the cost to integrate the System within the existing Military Health Services System was not determined because the number and capabilities of the computers at the corporate users, lead agents, and military treatment facilities were unknown. In addition, the capacity and usage of the existing communications infrastructure of the Military Health Services System was unknown. Estimating the cost to integrate the System requires comparing hardware and software requirements with the existing computer capability. Such comparison could not be done because the System user requirements had not been sufficiently defined.

Reported Cost. The OASD(HA) did not adequately report System life-cycle cost as required by DoD policies and procedures. DoD Directive 5000.1 states that acquisition systems should translate operational needs into stable, affordable programs. Also, information technology resources required to support an acquisition program should be included in the budget submission exhibits. OASD(HA) budget estimate submissions varied significantly from OASD(HA) estimates of System life-cycle cost. The following table shows the fluctuation in budget requests (budget estimate submission) and estimated System life-cycle costs (system fact sheet and functional economic analysis).

Reported Life-Cycle Costs

Document	Date	Estimated Life-Cycle Cost (in millions)
Budget estimate submission	October 1995	$109.8
System fact sheet	June 1996	326.7
System fact sheet	September 1996	301.3
Functional economic analysis	September 1996	362.5
Budget estimate submission	October 1996	192.4
System fact sheet	February 1997	374.9

The System fact sheet dated June 1996 stated that additional requirements will be fully funded by the OASD(HA) and the Services. However, other health programs could be put at risk by having to absorb a System funding shortfall. For example, the budget estimate submission dated October 1996 is about $180 million less than the life-cycle cost included in the System fact sheet dated February 1997. To ensure the affordability of the System, reported cost estimates need to incorporate all anticipated requirements.

Defining and Managing User Requirements

The System was not designated as a MAIS, and life-cycle cost was not adequately estimated and reported because controls were not in place to define and manage user requirements. User requirements are one of the major cost factors in the acquisition of an automated information system. Requirements impact software and hardware development, deployment schedules, user training documentation, and the support of the system throughout its life cycle. It is essential to the successful acquisition of an automated information system that requirements are sufficiently defined and managed.

Defining Requirements. Controls over defining user requirements, which determine the minimum operational capability of the system, were not adequate. DoD Directive 5000.1 requires that at each milestone, beginning with program

initiation (usually milestone I), thresholds[2] and objectives[3] be defined for cost, schedule, and performance. DoD Regulation 5000.2-R describes how the data can be presented in an operational requirements document (ORD). As of January 1997, the PMO did not have an approved ORD and the System was in the milestone II (engineering and development) phase of the acquisition process. The draft ORD, dated July 23, 1996, did not adequately define user requirements. For example, the draft ORD did not include the number of operating units (computers and servers) needed for System deployment. Also, the schedule considerations included in the draft ORD did not clearly specify the operational capability or level of performance needed for initial and fully operational capability.

Managing Requirements. The PMO did not have the controls in place to effectively manage new requirements and assess their impact on System cost, schedules, and capabilities. Monitoring baseline requirements for each function that satisfies user and interface requirements is a technique for controlling the development of a system through a formal management process. Baseline requirements should also identify the completion of major milestone activities. In addition to not having adequately defined requirements, the PMO accepted additional requirements without assessing their impact on the System's development as shown below.

o In the first quarter of FY 1996, the Military Health Services System Proponent Committee required that the System be available in all military treatment facilities at the clinical level instead of at the command level as originally planned. This change in requirements increased the estimated number of System users from 3,000 to 7,500. Documentation was not available to show how this requirement affected System cost, deployment schedules, and capabilities.

o The PMO stated that the Military Health Services System Proponent Committee further directed that the System would be used for the Medicare subvention demonstration project. That requirement should have been incorporated into the ORD. Further, the additional capability significantly increased the technical and financial risks to the System development because the scope of the System was increased. As of October 1996, requirements for the Medicare subvention demonstration project were being determined. However, the PMO anticipated that the System would be required to present patient level cost allocation data, which is an entirely new functionality to the Military Health Services System. The effect of a new functionality on System cost and development schedule needed to be evaluated before incorporating the requirements into the System.

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[2]The threshold is the minimum acceptable value that, in the user's judgment, is necessary to satisfy the need. If threshold values are not achieved, program performance is seriously degraded, the program may be too costly, or may be untimely.

[3]The objective is a value that is desired by the user and one that the program manager is attempting to obtain.

The PMO did not establish procedures to assess the impact and to control the integration of new requirements. One method to systematically monitor changes is through a configuration control board. The board controls changes by reviewing and approving modifications to the baseline configuration. Although a configuration control board was discussed in the program management plan, the program manager was not involved with the board and we did not find any evidence of a functioning board. As of October 1996, the System contractor was not actively participating in configuration management because the contractor no longer had the staff and software it previously had devoted to the function. In October 1996, the PMO and the contractor started formalizing procedures to implement a working configuration control board. Establishing a configuration control board would have established a frame of reference to monitor requirement changes and document their effect on System development.

Mitigation of System Risk

Without the controls in place to effectively manage the initial and additional requirements, the fiscal and technical risks of developing a system that meets users' needs are greatly increased. Completion of near-term deployment has slipped from the end of FY 1997 to the third quarter of FY 1998 due to changes in requirements. The slippage delays the System's absorption of the functions of existing systems, which have an annual operating cost of $14 million. In addition, budgeting for less than the total estimated cost is not consistent with DoD policy; and it places System acquisition at risk. Assessing the effect of original and additional requirements on System life-cycle cost is necessary to continually evaluate the System's affordability and to ensure that it represents the best value solution.

Management Initiatives to Reduce System Risks

The PMO has taken action to reduce the risks discussed above. Principal staff assistants of MAIS Review Council members from the Offices of the Under Secretary of Defense (Comptroller) and Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) and the Directors of Operational Test and Evaluation and Program Analysis and Evaluation concurred with our concerns about unmitigated System development risks. The most significant result from actions the PMO took was the transfer of System approval authority to the MAIS Review Council on October 17, 1996.

In conjunction with the System's MAIS designation, the PMO has taken steps to comply with project documentation requirements outlined in DoD Directive 5000.1 and DoD Regulation 5000.2R. The PMO is quantifying operational requirements and their impact on system development and cost. The PMO has developed a revised draft ORD and distributed it to the MAIS Review Council for comment. Also, the PMO is working with the Office of the Assistant

Secretary of Defense (Command, Control, Communications, and Intelligence) to develop an acquisition planning baseline that includes details on project cost, schedule, and performance. After the baseline is approved, the PMO will establish System milestone points and timelines. Since becoming a MAIS, the PMO has developed a draft test and evaluation master plan that the Office of the Director, Operational Test and Evaluation is reviewing. The plan includes provisions for using a contractor who is independent of the System contractor to conduct developmental testing. The PMO is also developing complete and accurate life-cycle cost estimates. Under the advisement of the Office of the Director, Program Analysis and Evaluation, the PMO is contracting with industry experts to prepare an independent component cost analysis. In our opinion, classifying the System as a MAIS and the resulting increased focus on program management has established the key controls necessary to ensure that user requirements are sufficiently defined and managed. In addition, risks associated with system development are being reduced. As a result, we are not making any recommendations in this report.

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Part II - Additional Information

Appendix A. Audit Process

Scope and Methodology

We reviewed DoD policies on information system acquisition. We also reviewed procedures at the OASD(HA) and the PMO, and System documentation from June 1995 to October 1996. We also reviewed the budget execution summaries for FYs 1997 through 1999, submitted by OASD(HA) to the Office of the Under Secretary of Defense (Comptroller).

Use of Computer-Processed Data. We did not rely on computer-processed data to perform this audit.

Limitations to Audit Scope. The overall audit objective was to determine whether DoD health care cost accounting systems provide managers with adequate and reliable information for cost-effective health care and budgeting decisions. The OASD(HA) recognized that its automated systems did not provide managers with adequate information and initiated development of several automated systems. In a memorandum dated May 8, 1996, the Deputy Assistant Secretary of Defense (Health Budgets and Programs) recommended that we delay the audit because of several initiatives underway to improve DoD health care automated information systems.

Although the System is not an accounting system, it is intended to be an integral component of the health care and budgeting decision process by providing managers with financial and clinical information. Therefore, we focused our audit on evaluating the management of the development of the System.

Use of Technical Assistance. Our Readiness and Operational Support Directorate and Technical Assessments Division assisted us in evaluating technical documentation.

Audit Periods and Standards. We performed this program audit from March 1996 through February 1997 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. The audit included such tests of management controls considered necessary.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available on request.

Summary of Prior Audits and Other Reviews. During the last 5 years, there were no prior audits or reviews of the System.

Management Control Program

DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987*, requires DoD organizations to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of the Review of the Management Control Program. We evaluated management controls related to the System development. Specifically, we evaluated the OASD(HA) implementation of DoD policies and procedures governing the acquisition of MAIS. We reviewed the results of any self-evaluation of those management controls.

Adequacy of Management Controls. At the OASD(HA), we identified material management control weaknesses in System development as defined by DoD Directive 5010.38. Management controls within the OASD(HA) did not ensure that the System was classified as a MAIS and that life-cycle cost was adequately estimated and reported. The details of the management control weaknesses are discussed in Part I of this report. However, this report does not contain recommendations because the PMO took the necessary actions to respond to our concerns. A copy of the final report will be provided to the senior official in charge of management controls for OASD(HA).

Adequacy of Management's Self-Evaluation. Although the OASD(HA) established an Information Management Project Review Board as one initiative to improve management controls over mission-related activities, it did not initiate actions to correct identified weaknesses. One of the board's functions is to perform program reviews using established functional, programmatic, and technical criteria. In June 1996, the board conducted an evaluation of the System and found that the System should be considered for designation as a MAIS. The evaluation also identified a possible increased technical risk due to the imposition of new requirements.

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*DoD Directive 5010.38 has been revised as "Management Control (MC) Program," August 26, 1996. The audit was performed under the April 1987 version of the Directive.

Appendix B. Report Distribution

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Audit Team Members

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